

Bisphosphonate effects upon relapse of orthodontically moved teeth

Abstarct

This study was designed to examine the effects of bisphosphonate (BP) administration on structure and functions of osteoclasts in alveolar bone resorption during relapse after orthodontic movement of rat molars. Twenty four male rats were used in this study. To produce orthodontic force, elastic band was inserted between the upper first and second molars for 21 days. At one day before elastic band removal, bisphosphonate was administered intraperitoneally. After elastic band removal, the rats were further maintained for 0, 5 and 10 days. The distal relapse movement of the first molars was examined by means of light, scanning and transmission electron microscopy. In bisphosphonate-administered rats, there was a decrease in the distal relapse movement in comparison to the control group and the histological observations revealed reduction in osteoclasts aggregation along the alveolar bone surfaces opposite the pressure side of the periodontal ligament with degenerative structural changes especially at the fifth day. It was concluded that systemic administration of bisphosphonate decreases the initial relapse in experimentally moved rat molars through a mechanism involving impairment of the structure and resorptive functions of osteoclasts.